Exhibit 8

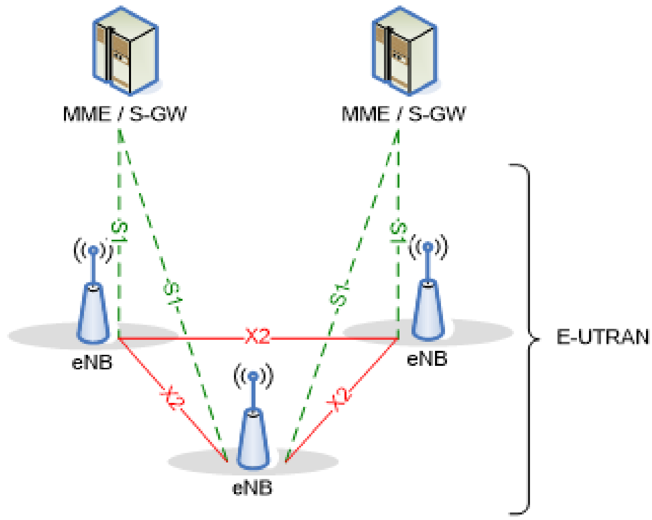
Exhibit 8
Claim 11 of U.S. Patent No. 10,833,908

US Patent No. 10,833,908: Claim 11(a)

"11. A method performed by a mobile station, the method comprising:"

11. A method performed by a mobile station, the method comprising:	Toyota's Accused Products include vehicles equipped with components and/or devices that enable connectivity to 4G/LTE networks and services, including services sold and provided by Toyota. To the extent the preamble is considered a limitation, Toyota's Accused Products meet the preamble of the '908 patent. *E.g.,* The LTE specification (Series 36, Release 8) supports user equipment (UE) to perform a random access (RACH) procedure. For example, release 8 of the 36 series 3GPP specifications was frozen in December of 2008 and that release was used as the basis for the first wave of LTE equipment. The LTE marketplace currently supports a mix of releases from Release 8 through Release 15. For ease of review release 8 of the LTE specification is cited below, but similar cites are available for each corresponding release on the market. An LTE communication system provides access to multiple users (user equipments (UEs)) through multiple cells associated with multiple eNodeBs. **4 Overall architecture** The E-UTRAN consists of eNBs, providing the E-UTRA user plane (PDCP/RLC/MAC/PHY) and control plane (RRC) protocol terminations towards the UE. The eNBs are interconnected with each other by means of the X2 interface. The eNBs are also connected by means of the S1 interface to the EPC (Evolved Packet Core), more specifically to the MME (Mobility Management Entity) by means of the S1-MME and to the Serving Gateway (S-GW) by means of the S1-U. The S1 interface supports a many-to-many relation between MMEs / Serving Gateways and eNBs. The E-UTRAN architecture is illustrated in Figure 4 below.

US Patent No. 10,833,908: Claim 11(a)
"11. A method performed by a mobile station, the method comprising:”

	 **Figure 4-1: Overall Architecture** *See e.g.*, 3GPP TS 36.300 V8.12.0 at pg. 15.

US Patent No. 10,833,908: Claim 11(b)

"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

transmitting, to a base station, a first uplink signal within a frequency band, wherein the first uplink signal is an orthogonal frequency division multiplexing (OFDM) signal and utilizes a frame format comprising a plurality of timeslots, each timeslot comprising a plurality of OFDM symbols;	Toyota's Accused Products transmit, to a base station, a first uplink signal within a frequency band, wherein the first uplink signal is an OFDM signal and utilizes a frame format comprising a plurality of timeslots, each timeslot comprising a plurality of OFDM symbols. *E.g.*, A frequency band used for LTE communication has an associated channel bandwidth over which uplink and downlink communication is transmitted between the UEs and the eNodeBs.

US Patent No. 10,833,908: Claim 11(b)

"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

5.6 Channel bandwidth

Requirements in present document are specified for the channel bandwidths listed in Table 5.6-1.

Table 5.6-1 Transmission bandwidth configuration N_{RB} in E-UTRA channel bandwidths

Channel bandwidth $BW_{Channel}$ [MHz]	1.4	3	5	10	15	20
Transmission bandwidth configuration N_{RB}	6	15	25	50	75	100

Figure 5.6-1 shows the relation between the Channel bandwidth ($BW_{Channel}$) and the Transmission bandwidth configuration (N_{RB}). The channel edges are defined as the lowest and highest frequencies of the carrier separated by the channel bandwidth, i.e. at F_C +/- $BW_{Channel}$ /2.

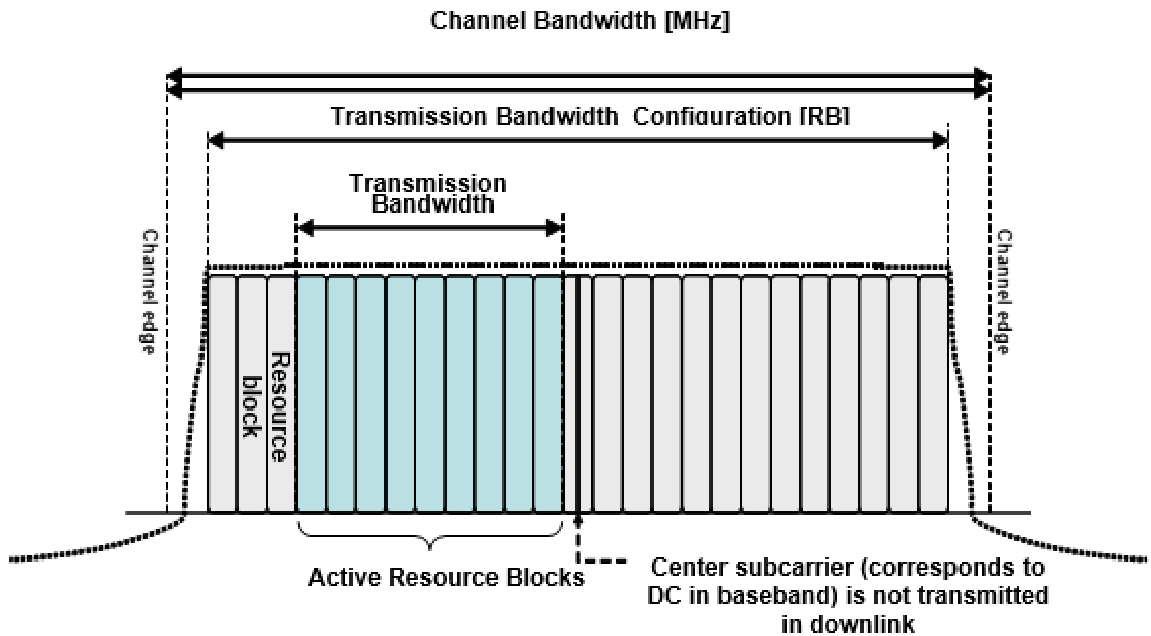


Figure 5.6-1 Definition of Channel Bandwidth and Transmission Bandwidth Configuration for one E-UTRA carrier

See e.g., 3GPP TS 36.101 V8.29.0 at pg. 15.

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"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

For the uplink, LTE uses a specific type of OFDM referred to a discrete Fourier Transform Spread (DFTS)-OFDM.

5.1.1 Basic transmission scheme based on OFDM

The downlink transmission scheme is based on conventional OFDM using a cyclic prefix. The OFDM sub-carrier spacing is Δf = 15 kHz. 12 consecutive sub-carriers during one slot correspond to one downlink *resource block*. In the frequency domain, the number of resource blocks, N_{RB}, can range from $N_{RB\text{-}min}$ = 6 to $N_{RB\text{-}max}$ = 110.

See e.g., 3GPP TS 36.300 V8.12.0 at pg. 25.

5.2.1 Basic transmission scheme

For both FDD and TDD, the uplink transmission scheme is based on single-carrier FDMA, more specifically DFTS-OFDM.

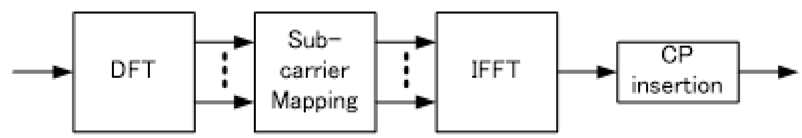

Figure 5.2.1-1: Transmitter scheme of SC-FDMA

The uplink sub-carrier spacing Δf = 15 kHz. The sub-carriers are grouped into sets of 12 consecutive sub-carriers, corresponding to the uplink resource blocks. 12 consecutive sub-carriers during one slot correspond to one uplink *resource block*. In the frequency domain, the number of resource blocks, N_{RB}, can range from $N_{RB\text{-}min}$ = 6 to $N_{RB\text{-}max}$ = 110.

See e.g., 3GPP TS 36.300 V8.12.0 at pgs. 27-28.

The UE transmits OFDM signals carrying data on the physical uplink shared channel (PUSCH).

US Patent No. 10,833,908: Claim 11(b)

"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

5.3 Physical uplink shared channel

The baseband signal representing the physical uplink shared channel is defined in terms of the following steps:

- scrambling
- modulation of scrambled bits to generate complex-valued symbols
- transform precoding to generate complex-valued symbols
- mapping of complex-valued symbols to resource elements
- generation of complex-valued time-domain SC-FDMA signal for each antenna port

Figure 5.3-1: Overview of uplink physical channel processing.

See e.g., 3GPP TS 36.211 V8.9.0 at pg. 13.

In LTE, both the type 1 and type 2 frame structures include multiple time slots.

4.1 Frame structure type 1

Frame structure type 1 is applicable to both full duplex and half duplex FDD. Each radio frame is $T_f = 307200 \cdot T_s = 10\ \text{ms}$ long and consists of 20 slots of length $T_{slot} = 15360 \cdot T_s = 0.5\ \text{ms}$, numbered from 0 to 19. A subframe is defined as two consecutive slots where subframe i consists of slots $2i$ and $2i+1$.

For FDD, 10 subframes are available for downlink transmission and 10 subframes are available for uplink transmissions in each 10 ms interval. Uplink and downlink transmissions are separated in the frequency domain. In half-duplex FDD operation, the UE cannot transmit and receive at the same time while there are no such restrictions in full-duplex FDD.

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"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

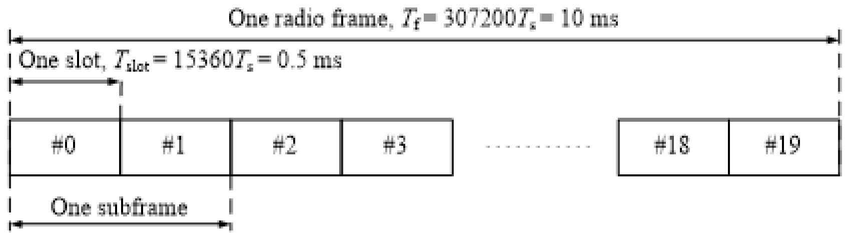

Figure 4.1-1: Frame structure type 1.

See e.g., 3GPP TS 36.211 V8.9.0 at pg. 9.

4.2 Frame structure type 2

Frame structure type 2 is applicable to TDD. Each radio frame of length $T_f = 307200 \cdot T_s = 10$ ms consists of two half-frames of length $153600 \cdot T_s = 5$ ms each. Each half-frame consists of five subframes of length $30720 \cdot T_s = 1$ ms . The supported uplink-downlink configurations are listed in Table 4.2-2 where, for each subframe in a radio frame, "D" denotes the subframe is reserved for downlink transmissions, "U" denotes the subframe is reserved for uplink transmissions and "S" denotes a special subframe with the three fields DwPTS, GP and UpPTS. The length of DwPTS and UpPTS is given by Table 4.2-1 subject to the total length of DwPTS, GP and UpPTS being equal to $30720 \cdot T_s = 1$ ms . Each subframe i is defined as two slots, $2i$ and $2i+1$ of length $T_{slot} = 15360 \cdot T_s = 0.5$ ms in each subframe.

Uplink-downlink configurations with both 5 ms and 10 ms downlink-to-uplink switch-point periodicity are supported.

In case of 5 ms downlink-to-uplink switch-point periodicity, the special subframe exists in both half-frames.

In case of 10 ms downlink-to-uplink switch-point periodicity, the special subframe exists in the first half-frame only.

Subframes 0 and 5 and DwPTS are always reserved for downlink transmission. UpPTS and the subframe immediately following the special subframe are always reserved for uplink transmission.

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"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

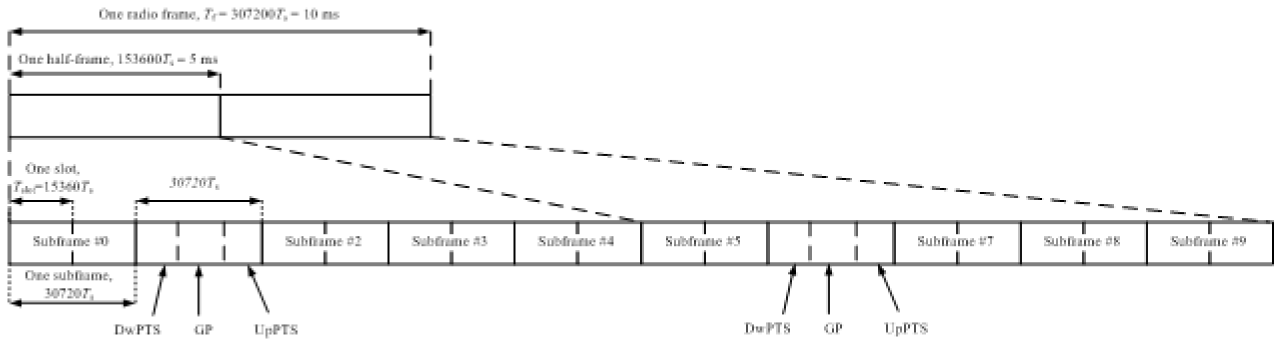

Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

See e.g., 3GPP TS 36.211 V8.9.0 at pg. 10.

Each time slot includes 7 symbols for a normal cyclic prefix (6 for extended).

5.2 Slot structure and physical resources

5.2.1 Resource grid

The transmitted signal in each slot is described by a resource grid of $N_{RB}^{UL} N_{sc}^{RB}$ subcarriers and N_{symb}^{UL} SC-FDMA symbols. The resource grid is illustrated in Figure 5.2.1-1. The quantity N_{RB}^{UL} depends on the uplink transmission bandwidth configured in the cell and shall fulfil

$$N_{RB}^{min,UL} \le N_{RB}^{UL} \le N_{RB}^{max,UL}$$

where $N_{RB}^{min,UL} = 6$ and $N_{RB}^{max,UL} = 110$ is the smallest and largest uplink bandwidth, respectively, supported by the current version of this specification. The set of allowed values for N_{RB}^{UL} is given by [7].

The number of SC-FDMA symbols in a slot depends on the cyclic prefix length configured by higher layers and is given in Table 5.2.3-1.

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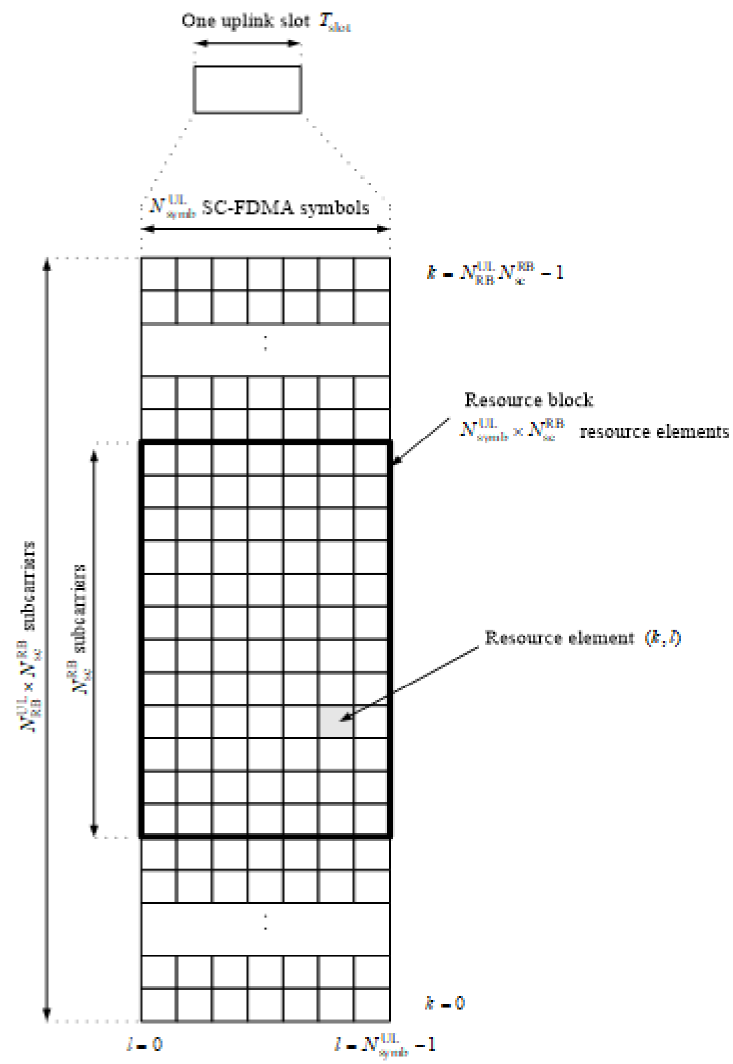
"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

	 **Figure 5.2.1-1: Uplink resource grid.** *See e.g.*, 3GPP TS 36.211 V8.9.0 at pg. 12.

US Patent No. 10,833,908: Claim 11(c)
"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,	Toyota's Accused Products transmit, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station. *E.g.*, The random access preamble transmitted on the PRACH occupies a bandwidth corresponding to 6 consecutive resource blocks in both the type 1 and type 2 frame structures, which is a fraction of the overall channel bandwidth (frequency band) for any other bandwidth than the smallest. The range of the overall channel bandwidth is the bandwidth of 6 to 100 resource blocks, corresponding to bandwidths 1.4MHz to 20MHz, with 20MHz being the most commonly used bandwidth 5.7 Physical random access channel 5.7.1 Time and frequency structure ...

US Patent No. 10,833,908: Claim 11(c)
"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

	The random access opportunities for each PRACH configuration shall be allocated in time first and then in frequency if and only if time multiplexing is not sufficient to hold all opportunities of a PRACH configuration needed for a certain density value D_{RA} without overlap in time. For preamble format 0-3, the frequency multiplexing shall be done according to $$n_{PRB}^{RA} = \begin{cases} n_{PRBoffset}^{RA} + 6\left\lfloor \frac{f_{RA}}{2} \right\rfloor, & \text{if } f_{RA} \bmod 2 = 0 \\ N_{RB}^{UL} - 6 - n_{PRBoffset}^{RA} - 6\left\lfloor \frac{f_{RA}}{2} \right\rfloor, & \text{otherwise} \end{cases}$$ where N_{RB}^{UL} is the number of uplink resource blocks, n_{PRB}^{RA} is the first physical resource block allocated to the PRACH opportunity considered and where the parameter *prach-FrequencyOffset* $n_{PRBoffset}^{RA}$ is the first physical resource block available for PRACH expressed as a physical resource block number configured by higher layers and fulfilling $0 \le n_{PRBoffset}^{RA} \le N_{\mathrm{RB}}^{\mathrm{UL}} - 6$. For preamble format 4, the frequency multiplexing shall be done according to $$n_{PRB}^{RA} = \begin{cases} 6 f_{RA}, & \text{if } \left((n_f \bmod 2) \times (2 - N_{SP}) + t_{RA}^{1}\right) \bmod 2 = 0 \\ N_{RB}^{UL} - 6(f_{RA} + 1), & \text{otherwise} \end{cases}$$ where n_f is the system frame number and where N_{SP} is the number of DL to UL switch points within the radio frame. Each random access preamble occupies a bandwidth corresponding to 6 consecutive resource blocks for both frame structures. *See e.g.*, 3GPP TS 36.211 V8.9.0 at pgs. 33, 35-36.

US Patent No. 10,833,908: Claim 11(c)
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Requirements in present document are specified for the channel bandwidths listed in Table 5.6-1.

Table 5.6-1 Transmission bandwidth configuration N_{RB} in E-UTRA channel bandwidths

Channel bandwidth $BW_{Channel}$ [MHz]	1.4	3	5	10	15	20
Transmission bandwidth configuration N_{RB}	6	15	25	50	75	100

Figure 5.6-1 shows the relation between the Channel bandwidth ($BW_{Channel}$) and the Transmission bandwidth configuration (N_{RB}). The channel edges are defined as the lowest and highest frequencies of the carrier separated by the channel bandwidth, i.e. at F_C +/- $BW_{Channel}$ /2.

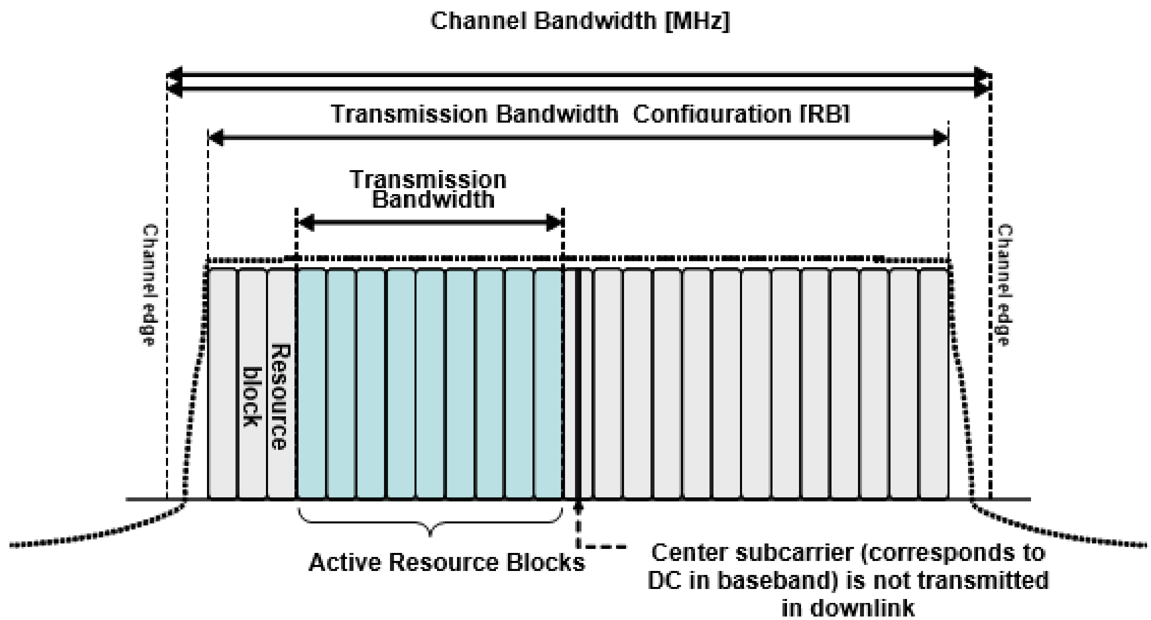


Figure 5.6-1 Definition of Channel Bandwidth and Transmission Bandwidth Configuration for one E-UTRA carrier

See e.g., 3GPP TS 36.101 V8.29.0 at pg. 15

US Patent No. 10,833,908: Claim 11(c)
"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

5.2.3 Resource blocks

A physical resource block is defined as $N_{\text{symb}}^{\text{UL}}$ consecutive SC-FDMA symbols in the time domain and $N_{\text{sc}}^{\text{RB}}$ consecutive subcarriers in the frequency domain, where $N_{\text{symb}}^{\text{UL}}$ and $N_{\text{sc}}^{\text{RB}}$ are given by Table 5.2.3-1. A physical resource block in the uplink thus consists of $N_{\text{symb}}^{\text{UL}} \times N_{\text{sc}}^{\text{RB}}$ resource elements, corresponding to one slot in the time domain and 180 kHz in the frequency domain.

Table 5.2.3-1: Resource block parameters.

Configuration	$N_{\text{sc}}^{\text{RB}}$	$N_{\text{symb}}^{\text{UL}}$
Normal cyclic prefix	12	7
Extended cyclic prefix	12	6

The relation between the physical resource block number n_{PRB} in the frequency domain and resource elements (k,l) in a slot is given by

$$n_{\text{PRB}} = \left\lfloor \frac{k}{N_{\text{sc}}^{\text{RB}}} \right\rfloor$$

See e.g., 3GPP TS 36.211 V8.9.0 at pg. 13.

The random access burst includes a guard time added after the preamble transmission.

5.2.5 Random access preamble

The physical layer random access burst consists of a cyclic prefix, a preamble, and a guard time during which nothing is transmitted.

The random access preambles are generated from Zadoff-Chu sequences with zero correlation zone, ZC-ZCZ, generated from one or several root Zadoff-Chu sequences.

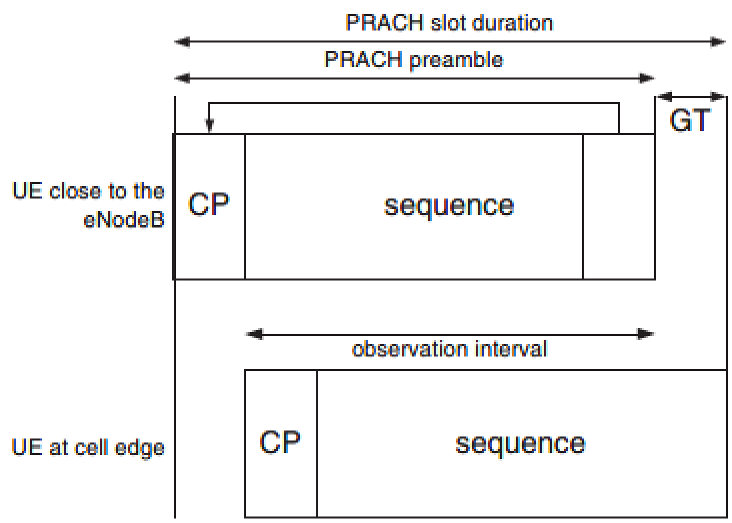
See e.g., 3GPP TS 36.300 V8.12.0 at pg. 29.

17.4.2 The PRACH Structure

17.4.2.1 DFT-S-OFDM PRACH Preamble Symbol

...

US Patent No. 10,833,908: Claim 11(c)
"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

	The UE aligns the start of the random access preamble with the start of the corresponding uplink subframe at the UE assuming a timing advance of zero (see Section 18.2), and the preamble length is shorter than the PRACH slot in order to provide room for a Guard Time (GT) to absorb the propagation delay. Figure 17.6 shows two preambles at the eNodeB received with different timings depending on the propagation delay: as for a conventional  Figure 17.6: PRACH preamble received at the eNodeB. OFDM symbol, a single observation interval can be used regardless of the UE's delay, within which periodic correlation is possible. *See* Sesia, Toufik and Baker, "LTE: The UMTS Long Term Evolution From Theory to Practice", at pgs. 377-378.

US Patent No. 10,833,908: Claim 11(c)

"transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,"

5.7.2 Preamble sequence generation

The random access preambles are generated from Zadoff-Chu sequences with zero correlation zone, generated from one or several root Zadoff-Chu sequences. The network configures the set of preamble sequences the UE is allowed to use.

There are 64 preambles available in each cell. The set of 64 preamble sequences in a cell is found by including first, in the order of increasing cyclic shift, all the available cyclic shifts of a root Zadoff-Chu sequence with the logical index RACH_ROOT_SEQUENCE, where RACH_ROOT_SEQUENCE is broadcasted as part of the System Information. Additional preamble sequences, in case 64 preambles cannot be generated from a single root Zadoff-Chu sequence, are obtained from the root sequences with the consecutive logical indexes until all the 64 sequences are found. The logical root sequence order is cyclic: the logical index 0 is consecutive to 837. The relation between a logical root sequence index and physical root sequence index u is given by Tables 5.7.2-4 and 5.7.2-5 for preamble formats 0 – 3 and 4, respectively.

The u^{th} root Zadoff-Chu sequence is defined by

$$x_u(n) = e^{-j\frac{\pi u n(n+1)}{N_{ZC}}}, \quad 0 \le n \le N_{ZC} - 1$$

where the length N_{ZC} of the Zadoff-Chu sequence is given by Table 5.7.2-1. From the u^{th} root Zadoff-Chu sequence, random access preambles with zero correlation zones of length $N_{CS} - 1$ are defined by cyclic shifts according to

See e.g., 3GPP TS 36.211 V8.9.0 at p. 39.

Table 5.7.2-1: Random access preamble sequence length.

Preamble format	N_{ZC}
0 – 3	839
4	139

See e.g., 3GPP TS 36.211 V8.9.0 at p. 40.

US Patent No. 10,833,908: Claim 11(d)
"wherein a time duration of a combination of the random access signal and the guard period is greater than a time duration of at least one of the plurality of OFDM symbols; and"

wherein a time duration of a combination of the random access signal and the guard period is greater than a time duration of at least one of the plurality of OFDM symbols; and	The time duration of a combination of the random access signal and the guard period implemented using Toyota's Accused Products is greater than a time duration of at least one of the plurality of OFDM symbols. *E.g.*, LTE defines a basic time unit (*T*s) and is equal to 1/ (15000 x 2048) seconds. The symbol time is 2048 **T*s or 66.7 µs. **3.1 Symbols** For the purposes of the present document, the following symbols apply: … $N_{\text{symb}}^{\text{UL}}$ Number of SC-FDMA symbols in an uplink slot … T_{s} Basic time unit *See e.g.*, 3GPP TS 36.211 V8.9.0 at pgs. 7-8. An LTE slot typically has 7 symbols, except for extended cyclic prefix which has 6 symbols. As a result, a symbol for a typical slot is ~2192 base time intervals and for extended cyclic prefix is ~2560 basic time intervals. **5.2.1 Basic transmission scheme** For both FDD and TDD, the uplink transmission scheme is based on single-carrier FDMA, more specifically DFTS-OFDM. … There are two cyclic-prefix lengths defined: Normal cyclic prefix and extended cyclic prefix corresponding to seven and six SC-FDMA symbol per slot respectively. - Normal cyclic prefix: T_{CP} = 160×Ts (SC-FDMA symbol #0) , T_{CP} = 144×Ts (SC-FDMA symbol #1 to #6) - Extended cyclic prefix: $T_{CP\text{-}e}$ = 512×Ts (SC-FDMA symbol #0 to SC-FDMA symbol #5) *See e.g.*, 3GPP TS 36.300 V8.12.0 at pgs. 27-28.

US Patent No. 10,833,908: Claim 11(d)

"wherein a time duration of a combination of the random access signal and the guard period is greater than a time duration of at least one of the plurality of OFDM symbols; and"

5.2 Slot structure and physical resources

5.2.1 Resource grid

The number of SC-FDMA symbols in a slot depends on the cyclic prefix length configured by higher layers and is given in Table 5.2.3-1.

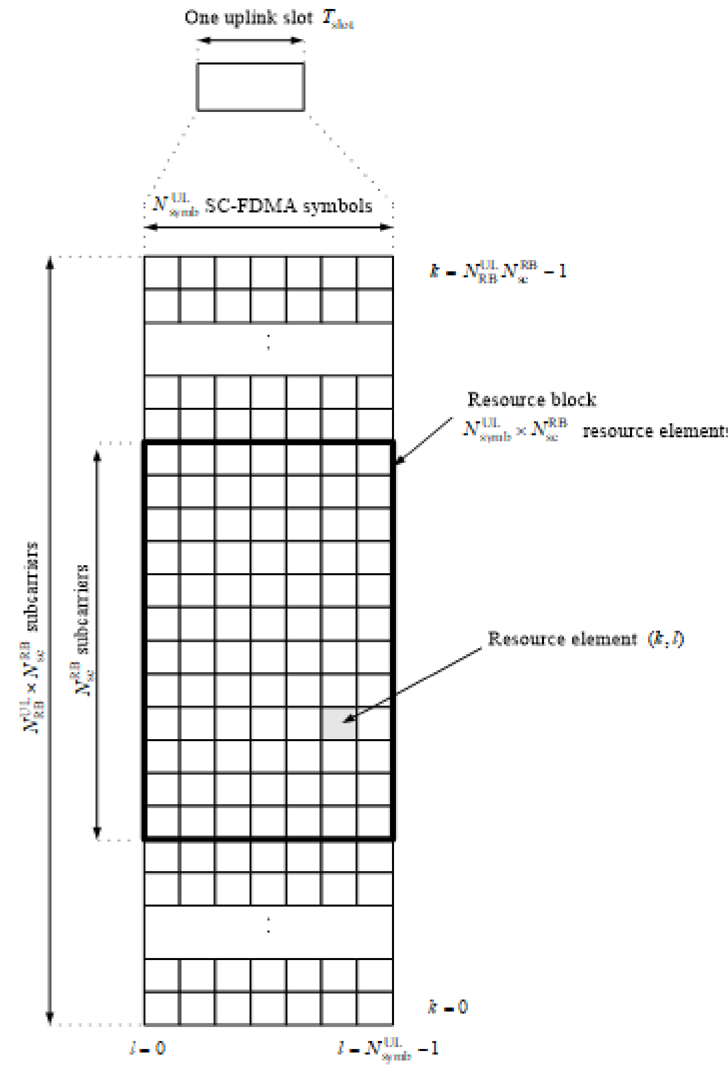


Figure 5.2.1-1: Uplink resource grid.

US Patent No. 10,833,908: Claim 11(d)
"wherein a time duration of a combination of the random access signal and the guard period is greater than a time duration of at least one of the plurality of OFDM symbols; and"

See e.g., 3GPP TS 36.211 V8.9.0 at pg. 12.

5.2.3 Resource blocks

A physical resource block is defined as $N_{\text{symb}}^{\text{UL}}$ consecutive SC-FDMA symbols in the time domain and $N_{\text{sc}}^{\text{RB}}$ consecutive subcarriers in the frequency domain, where $N_{\text{symb}}^{\text{UL}}$ and $N_{\text{sc}}^{\text{RB}}$ are given by Table 5.2.3-1. A physical resource block in the uplink thus consists of $N_{\text{symb}}^{\text{UL}} \times N_{\text{sc}}^{\text{RB}}$ resource elements, corresponding to one slot in the time domain and 180 kHz in the frequency domain.

Table 5.2.3-1: Resource block parameters.

Configuration	$N_{\text{sc}}^{\text{RB}}$	$N_{\text{symb}}^{\text{UL}}$
Normal cyclic prefix	12	7
Extended cyclic prefix	12	6

See e.g., 3GPP TS 36.211 V8.9.0 at pg. 13.

Preamble formats 0-4 have sequence lengths of 4096 to 49,152 basic time intervals.

5.7 Physical random access channel

5.7.1 Time and frequency structure

The physical layer random access preamble, illustrated in Figure 5.7.1-1, consists of a cyclic prefix of length T_{CP} and a sequence part of length T_{SEQ}. The parameter values are listed in Table 5.7.1-1 and depend on the frame structure and the random access configuration. Higher layers control the preamble format.

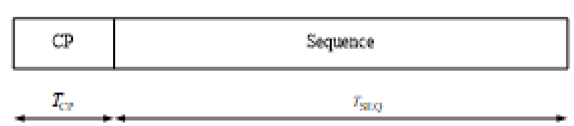


Figure 5.7.1-1: Random access preamble format.

US Patent No. 10,833,908: Claim 11(d)
"wherein a time duration of a combination of the random access signal and the guard period is greater than a time duration of at least one of the plurality of OFDM symbols; and"

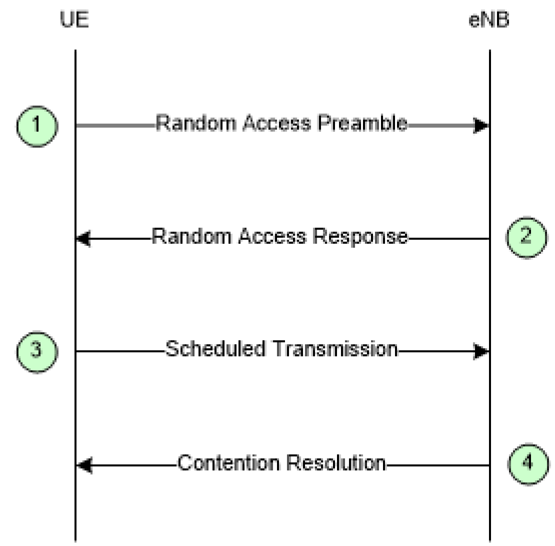
	Table 5.7.1-1: Random access preamble parameters. Preamble format / T_{CP} / T_{SEQ}: 0 / $3168 \cdot T_s$ / $24576 \cdot T_s$ 1 / $21024 \cdot T_s$ / $24576 \cdot T_s$ 2 / $6240 \cdot T_s$ / $2 \cdot 24576 \cdot T_s$ 3 / $21024 \cdot T_s$ / $2 \cdot 24576 \cdot T_s$ 4* / $448 \cdot T_s$ / $4096 \cdot T_s$ *See e.g.*, 3GPP TS 36.211 V8.9.0 at pg. 33.

Table 5.7.1-1: Random access preamble parameters.

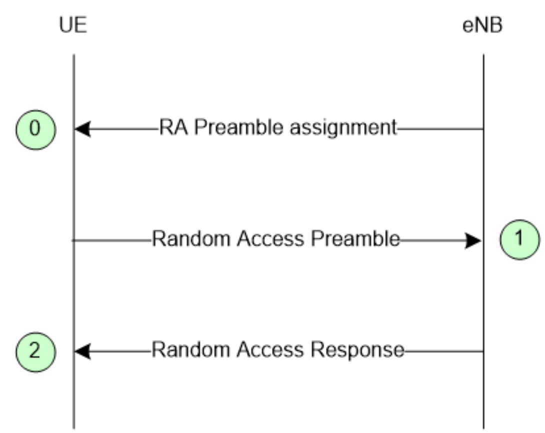
Preamble format	T_{CP}	T_{SEQ}
0	$3168 \cdot T_s$	$24576 \cdot T_s$
1	$21024 \cdot T_s$	$24576 \cdot T_s$
2	$6240 \cdot T_s$	$2 \cdot 24576 \cdot T_s$
3	$21024 \cdot T_s$	$2 \cdot 24576 \cdot T_s$
4*	$448 \cdot T_s$	$4096 \cdot T_s$

See e.g., 3GPP TS 36.211 V8.9.0 at pg. 33.

US Patent No. 10,833,908: Claim 11(e)
"receiving, from the base station, a response message."

receiving, from the base station, a response message. ;	Toyota's Accused Products receive, from the base station, a response message. *E.g.*, Once the Random Access Preamble is transmitted, the UE shall monitor the PDCCH for Random Access Response(s) identified by the RA-RNTI. The random access response is sent by the eNB and received by the UE via the PDSCH and addresses with the RA-RNTI ID. 10.1.5.1 Contention based random access procedure The contention based random access procedure is outlined on Figure 10.1.5.1-1 below:  **Figure 10.1.5.1-1: Contention based Random Access Procedure** The four steps of the contention based random access procedures are: ... 2) Random Access Response generated by MAC on DL-SCH: - Semi-synchronous (within a flexible window of which the size is one or more TTI) with message 1; - No HARQ; - Addressed to RA-RNTI on PDCCH; - Conveys at least RA-preamble identifier, Timing Alignment information, initial UL grant and assignment of Temporary C-RNTI (which may or may not be made permanent upon Contention Resolution); - Intended for a variable number of UEs in one DL-SCH message.

US Patent No. 10,833,908: Claim 11(e)
"receiving, from the base station, a response message."

	See e.g., 3GPP TS 36.300 V8.12.0 at pgs. 52-53. 10.1.5.2 Non-contention based random access procedure The non-contention based random access procedure is outlined on Figure 10.1.5.2-1 below:  **Figure 10.1.5.2-1: Non-contention based Random Access Procedure** The three steps of the non-contention based random access procedures are:

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	0) Random Access Preamble assignment via dedicated signalling in DL:
	- eNB assigns to UE a non-contention Random Access Preamble (a Random Access Preamble not within the set broadcasted on BCH).
	- Signalled via:
	  - HO command generated by target eNB and sent via source eNB for handover;
	  - PDCCH in case of DL data arrival.
	1) Random Access Preamble on RACH in uplink:
	- UE transmits the assigned non-contention Random Access Preamble.
	2) Random Access Response on DL-SCH:
	- Semi-synchronous (within a flexible window of which the size is one or more TTI) with message 1;
	- No HARQ;
	- Addressed to RA-RNTI on PDCCH;
	- Conveys at least:
	  - Timing Alignment information and initial UL grant for handover;
	  - Timing Alignment information for DL data arrival;
	  - RA-preamble identifier.
	  - Intended for one or multiple UEs in one DL-SCH message.
	See e.g., 3GPP TS 36.300 V8.7.0 at pgs. 54 and 55.
	
	5.1.4 Random Access Response reception
	Once the Random Access Preamble is transmitted and regardless of the possible occurrence of a measurement gap, the UE shall monitor the PDCCH for Random Access Response(s) identified by the RA-RNTI defined below, in the RA Response window which starts at the subframe that contains the end of the preamble transmission [7] plus three subframes and has length *ra-ResponseWindowSize* subframes. The RA-RNTI associated with the PRACH in which the Random Access Preamble is transmitted, is computed as:
	RA-RNTI= 1 + t_id+10*f_id
	Where t_id is the index of the first subframe of the specified PRACH ($0 \le$ t_id <10), and f_id is the index of the specified PRACH within that subframe, in ascending order of frequency domain ($0 \le$ f_id< 6). The UE may stop monitoring for Random Access Response(s) after successful reception of a Random Access Response containing Random Access Preamble identifiers that matches the transmitted Random Access Preamble.
	See e.g., 3GPP TS 36.300 V8.12.0 at pg. 14.

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	17.3.1.2 Step 2: Random Access Response The Random Access Response (RAR) is sent by the eNodeB on the Physical Downlink Shared CHannel (PDSCH), and addressed with an ID, the Random Access Radio Network Temporary Identifier (RA-RNTI), identifying the time-frequency slot in which the preamble was detected. If multiple UEs had collided by selecting the same signature in the same preamble time-frequency resource, they would each receive the RAR. The RAR conveys the identity of the detected preamble, a timing alignment instruction to synchronize subsequent uplink transmissions from the UE, an initial uplink resource grant for transmission of the Step 3 message, and an assignment of a temporary Cell Radio Network Temporary Identifier (C-RNTI) (which may or may not be made permanent as a result of the next step – contention resolution). The RAR message can also include a 'backoff indicator' which the eNodeB can set to instruct the UE to back off for a period of time before retrying a random access attempt. *See* Sesia, Toufik and Baker, "LTE: The UMTS Long Term Evolution From Theory to Practice", at pg. 374.